

DEMOLITION	Identifier: PRD-2024 Revision*: 6 Page: 1 of 10
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Subcontractors	Program Requirements Document	For Additional Info: http://EDMS	Effective Date: 07/07/20
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Manual: Subcontractor Requirements

USE TYPE 3Change Number: 366489

*The current revision can be verified on EDMS.

1. PURPOSE

Proper monitoring and control of demolition activities ensure these activities are accomplished in a safe manner and in accordance with existing requirements. This document implements requirements from codes and standards along with *contractor* (see def.) requirements. Any applicable regulatory or contractor requirements must be followed, with the most stringent requirement being met

2. APPLICABILITY

This document applies to all subcontractors who conduct demolition activities at the Idaho National Laboratory (INL), as specified in their contract with the contractor. Stricter requirements may be imposed by subcontractors upon their employees or sub-tier contractors. The requirements of this document must be followed by subcontractors; however, the means of implementation may vary as determined by the subcontractor.

3. REQUIREMENTS

3.1 Demolition work shall be in accordance with 29 CFR 1926, Subpart T.

3.1.1 The requirements from 29 CFR 1926 Subpart T include:

- A. 1926.850 - Preparatory operations.
- B. 1926.851 - Stairs, passageways, and ladders.
- C. 1926.852 - Chutes.
- D. 1926.853 - Removal of materials through floor openings.
- E. 1926.854 - Removal of walls, masonry sections, and chimneys.
- F. 1926.855 - Manual removal of floors.
- G. 1926.856 - Removal of walls, floors, and material with equipment.
- H. 1926.857 - Storage.
- I. 1926.858 - Removal of steel construction.
- J. 1926.859 - Mechanical demolition.
- K. 1926.860 - Selective demolition by explosives.

3.2 A hazards analysis, per PRD-1501, "Work Control" and a demolition plan shall be completed for the project before demolition begins.

DEMOLITION

Identifier: PRD-2024

Revision*: 6

Page: 2 of 10

NOTE: *A sample of a demolition plan is found in Appendix A. The written demolition plan will have at least the minimum elements described in Appendix A.*

- 3.3 Demolition work shall be done by qualified personnel.
- 3.4 All personnel engaged in demolition activities shall be trained to the demolition plan.
- 3.5 Training documentation shall be verified, with particular attention being paid to mixed environments (such as an asbestos worker working in a confined space, in a radiological area, or on a hazardous waste site).
- 3.6 The number of personnel allowed in the demolition area shall be limited to those persons necessary to perform the work tasks.
- 3.7 Lines of demarcation shall be placed before any demolition work starts. Work areas and adjacent affected areas shall be protected or closed to unqualified or unauthorized personnel using fences, signs, rope, or other appropriate barriers.
 - 3.7.1 The *contractor Point of Contact* (POC; see def.) shall be consulted for direction regarding additional signs, such as:
 - A. radiation signs
 - B. CERCLA postings
 - C. RCRA waste postings
 - D. asbestos removal or advisory signs
 - E. flammable or combustible material storage.
 - 3.7.2 Warning lights shall be placed on or about all barricades as necessary to prevent inadvertent pedestrian and vehicular access after dark.
- 3.8 Selective demolition by explosives shall be conducted through subcontracting the work and in accordance with requirements listed in PRD-2025, “Explosives Safety” and the current version of DOE STD-1212 “Explosive Safety.”
- 3.9 Before demolition begins, an engineering survey of the structure shall be obtained from the contractor POC. This survey shall be in accordance with 29 CFR 1926.850.
- 3.10 Before demolition, utilities shall be located in accordance with contractor’s process defined in MCP-1388, “Subsurface Investigations, Excavations, and Surface Penetrations.”

DEMOLITION

Identifier: PRD-2024

Revision*: 6

Page: 3 of 10

- 3.11 Before demolition begins, utilities, systems and components including all electric, gas, water, steam, sewer, and other service lines shall be shut off, capped, visibly air gapped or otherwise controlled outside the building line before demolition work is started.
- 3.12 Before removal, utilities, systems and components to be removed must be de-energized or verified as not containing hazardous materials. Utilities, and systems, and components shall be verified as disconnected or de-energized by completion of a previous work order, drawings, or through zero energy verification.
- 3.13 Release of work for any system component removal will occur at the task level and documented in the work order(s), per PRD-1501, “Work Control,” after completion of the following:
 - 3.13.1 Piping/conduit or system component being cut or removed has been independently verified.
 - 3.13.2 A field walkdown has been performed by workers performing the work.
 - 3.13.3 Supervision has confirmed the break point/isolation is correct and fully understood by each worker.
- 3.14 Earthwork supporting demolition activities shall be performed in accordance with PRD-2014, Excavations and Surface Penetrations.
- 3.15 Debris shall be removed, and good housekeeping maintained as part of an ongoing process.
- 3.16 Pedestrian and vehicular traffic shall be controlled, at a minimum, in any area that is closer than one-fourth of the height of the structure to the perimeter of the structure being demolished.
- 3.17 Demolition, which primarily encompasses demolition associated with component or system replacement or upgrade in or near operating facilities shall have additional requirements. These requirements are:
 - 3.17.1 Each project that includes demolition will require a subcontractor generated work order that will positively identify systems to be demolished.
 - 3.17.2 Work order instructions shall include the extent of systems to be removed and the zero energy checks to be performed or other acceptable safety mitigations for these systems.
 - 3.17.3 Work order instruction must require special attention to lockout/tagout for projects where systems are to be systematically de-energized as demolition activities progress.

DEMOLITION	Identifier: PRD-2024 Revision*: 6 Page: 4 of 10
-------------------	---

- 3.17.4 Color-coded identification markings that will be implemented shall be discussed with workers performing system removal.
- 3.17.5 The work order shall identify markings prior to demolition activities as follows:
- 3.17.5.1 For building systems and components removal, color-coded identification markings shall be physically applied in the following manner:
- NOTE:** *Markings will be an ongoing process during pre-demolition activities as systems are addressed.*
- 3.17.5.2 Green ribbon, tape, or paint shall be used to indicate a system/component has been completely de-energized or isolated and ALL necessary actions have been completed to make that system/component safe and ready to be removed.
- 3.17.5.3 Any system/component that is not marked green shall be considered an active or energized system and shall be treated as such until it can be verified de-activated/de-energized.
- 3.17.5.4 Green ribbon, tape, or paint shall be applied at intervals that easily identify the run and extent of the system. Green ribbon, tape or paint must be placed in clearly visible manner per the following:
- 3.17.5.4.1 Straight runs must be marked approximately every 10 ft or less.
- 3.17.5.4.2 Systems shall be marked at isolation points.
- 3.17.5.4.3 Systems shall be marked at each transition/change of direction as well as through any wall or barrier.
- 3.17.5.5 Red ribbon, tape, or paint may be used to bring increased awareness to an active or energized system.
- 3.17.5.6 For physical demolition (i.e. dismantling a building or structure) color-coded identification markings shall be physically applied to building systems as shown per work orders in the following manner.

DEMOLITION	Identifier: PRD-2024 Revision*: 6 Page: 5 of 10
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- 3.17.5.7 Active or energized systems that will be left in place during physical demolition shall be marked with red ribbon tape or paint, in a clearly visible manner when there could be confusion such as proximity to systems that are designated for removal.
 - 3.17.5.7.1 Straight runs must be marked approximately every 10 ft or less.
 - 3.17.5.7.2 Systems shall be marked at each transition/change of direction as well as through any wall or barrier.
- 3.17.5.8 Systems to be removed during physical demolition shall be marked with green ribbon, tape, or paint, but only after they have been verified deenergized/isolated.
 - 3.17.5.8.1 Straight runs must be marked approximately every 10 ft or less.
 - 3.17.5.8.2 Systems shall be marked at isolation points.
 - 3.17.5.8.3 Systems shall be marked at each transition/change of direction as well as through any wall or barrier.
- 3.17.6 When systems cannot be marked with green ribbon, tape, or paint prior to removal, due to accessibility or safety reasons, they shall be verified isolated and signed off as isolated and ready to be removed by engineering in the demolition work order prior to starting physical demolition.
- 3.17.7 If a building has been completely isolated of all its mechanical and electrical hazards and has had that all electrical and mechanical hazards eliminated, and all utilities isolated, making the building ready for physical demolition (also known as cold, dark, and dry), marking would not be required. In this case a signed section in the demolition work order from the engineering manager and electrical supervisor stating all systems have been isolated and de energized may be used in lieu of marking.
- 3.18 The demolition project shall be monitored for regulatory compliance and compliance with this PRD.

4. DEFINITIONS

See LST-27

DEMOLITION	Identifier: PRD-2024 Revision*: 6 Page: 6 of 10
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5. REFERENCES

5.1 Source Documents

29 CFR 1926, Subpart T, Demolition

40 CFR 61.145, Standard Demolition and Renovation

American National Standards Institute (ANSI) Standard A10.6-1990, Safety Requirements for Demolition Operations

ANSI A10.7-1989, Construction and Demolition & Commercial Explosives and Blasting Agents-Safety Requirements for Transportation, Storage, Handling, and Use

ANSI A10.8-1988, Construction and Demolition Operations & Scaffolding-Safety Requirements

ANSI A10.9-1983, Construction and Demolition Operations & Concrete and Masonry Work-Safety Requirements

ANSI A10.9a-1989, Construction and Demolition Operations & Concrete and Masonry Work [Supplement to ANSI A10.9-1983]

DOE STD-1212 (current revision) “Explosive Safety.”

5.2 Related Requirements

The following documents may also contain requirements that apply to this activity:

MCP-1388, “Subsurface Investigations, Excavations, And Surface Penetrations” (contractor’s document)

PRD-1501, “Work Control”

PRD-2001, “Personal Protective Equipment”

PRD-2002, “Fall Protection”

PRD-2003, “Ladders”

PRD-2004, “Scaffolding”

PRD-2005, “Walking and Working Surfaces”

PRD-2007, “Hoisting and Rigging”

DEMOLITION	Identifier: PRD-2024 Revision*: 6 Page: 7 of 10
-------------------	---

PRD-2011, “Electrical Safety Requirements for Subcontractors”

PRD-2012, “Lockout and Tagout”

PRD-2014, “Excavations and Surface Penetrations”

PRD-2016, “Material Handling, Storage, and Disposal”

PRD-2022, “Signs, Color Codes, and Barricades”

PRD-2025, “Explosives Safety”

PRD-2101, “Hazard Communication”

PRD-2107, “Heat and Cold Stress”

PRD-2108, “Hearing Conservation”

PRD-2109, “Respiratory Protection”

PRD-2110, “Confined Spaces”

6. APPENDIXES

Appendix A, Sample Demolition Plan

DEMOLITION	Identifier: PRD-2024 Revision*: 6 Page: 8 of 10
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Appendix A

Sample – Demolition Plan

1. PURPOSE

- 1.1 The purpose of this demolition plan is to establish requirements by which demolition activities will be performed.

2. SCOPE AND APPLICABILITY

- 2.1 This guideline is applicable to system and components removal and physical demolition activities within operating facilities. This guide will provide a consistent and positive method for identification and removal of individual components within a system.
- 2.2 Demolition includes the removal of piping systems, electrical systems, system components, utilities, or the removal of any item within an operating facility, or the physical demolition of a facility or structure.

3. PREREQUISITES

- 3.1 The requirements for the implementation of this plan shall be identified in the project documents.
- 3.2 Personnel performing demolition activities shall be trained to the requirements of this plan and evidence of such shall be noted in the Pre-job Briefing and training records.

4. INSTRUCTIONS

4.1 Planning and Coordination

- 4.1.1 The job supervisor shall coordinate all demolition efforts and interface with the various crafts and Operations Support personnel involved. Coordination will include outage planning, demolition walkdowns, and will support safe operation of the facility as required.
- 4.1.2 The job supervisor shall walk the job daily with the individual crafts involved in the demolition activities. The job supervisor may elect to pass this requirement on to the individual craft foreman, however one individual shall be responsible for all demolition activities associated with the project.

DEMOLITION	Identifier: PRD-2024 Revision*: 6 Page: 9 of 10
-------------------	---

4.2 Identification Marking

4.2.1 Color coded identification marking shall be applied to all systems shown on the project documentation prior to starting demolition activities. The color-coding shall identify whether the system is identified for demolition. Work control documents must specifically identify the systems to be removed, including all relevant mitigations for hazards of the system. Work control must also identify how system that will be partially removed will be marked, to distinguish sections to be removed from sections to remain in place. Color ribbon, tape or paint will be placed as follows:

Red – systems NOT prepared for demolition or removal.

Green – systems identified and prepared for demolition

4.2.2 The color code system shall include a positive means for verification that a system or component is approved for removal, and the markings meet the requirements listed in PRD-2024.

4.3 Pre-job Briefing

4.3.1 A Pre-job Briefing shall be held prior to each shift's demolition activities to address the guidelines and safety requirements outlined in this plan. Pre-job Briefings shall include a review of the work orders associated with the job tasks, the color code marking system, and a review of the drawings at the job site identifying the components to be removed.

NOTE: *Some projects may only provide schematic drawings. Special attention should be place on the actual field conditions when using schematic drawings for planning purposes.*

4.4 Walkdown Verification

4.4.1 **Initial walkdown.** The systems shall be walked down initially at the start of the project with Operations Support personnel. The initial walkdown will be performed as verification that the correct system components have been identified.

4.4.2 **Pre-demolition walkdown.** Pre-demolition walkdowns with the job supervisor and Operations Support personnel will be performed prior to each shift using the work orders to ensure hazards have been identified and mitigated.

4.4.3 The walkdowns will ensure that identification markings are correct. Ribbon, tape, or paint shall be applied to the systems for the demolition activity. The job supervisor shall also remove any ribbon/tape that is out of date.

DEMOLITION	Identifier: PRD-2024 Revision*: 6 Page: 10 of 10
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- 4.4.4 The job supervisor shall discuss with operations support personnel all lockout / tagout requirements and ensure lockout / tagouts are in place prior to marking the system.
- 4.4.5 **Changes.** If there are changes to project scope or changes due to design errors or omissions the new work shall be reviewed and walked down.
- 4.4.6 **Daily feedback.** The job supervisor shall perform a walkdown at the end of each shift and prior to weekend or holiday breaks to ensure the job site has been left in a safe condition. The walkdown should include construction signs and barriers and changes to operational postings that may need to be updated due to removed equipment and components. These walkdowns will be discussed with the crafts to obtain daily feedback of the current work activities,

4.5 Demolition

- 4.5.1 Employees shall only demolish systems that have the proper marked identifying the system. If a system contains a marking that is out of date or improper system identification the employees shall notify the foreman or job supervisor.
- 4.5.2 Employees shall only demolish systems that they are qualified to remove. The job supervisor shall ensure each worker meets the qualifications required for assigned activities.

4.6 Post Demolition / Post Job Review

- 4.6.1 At the completion of demolition activities, the job supervisor shall walkdown the project with the individual craft supervision and Operations Support personnel to ensure all identified systems have been removed and left in a safe condition for continued operation of the plant and for follow-on installation crews.
- 4.6.2 The post demolition walkdown shall include a review of the drawings to further ensure all system components have been removed.

5. APPENDICES

5.1 Attachments

- 5.1.1 None

5.2 Exhibits

- 5.2.1 None